

---

# *Cardiospermum cuchujaquense* (Sapindaceae), a New Species from Sonora, Mexico

María S. Ferrucci

Instituto de Botánica del Nordeste, C.C. 209, 3400, Corrientes, Argentina

Pedro Acevedo-Rodríguez

Smithsonian Institution, Dept. of Botany, National Museum of Natural History, NHB-166, Washington, D.C. 20560, U.S.A.

---

**ABSTRACT.** A new species, *Cardiospermum cuchujaquense* from Sonora, Mexico, is described and illustrated. The new species belongs to *C.* sect. *Carphospermum*, which is characterized by the presence of chaffy or scaly trichomes. With the discovery of *C. cuchujaquense*, a pattern of disjunct distribution is documented for *C.* sect. *Carphospermum*.

**RESUMEN.** En el presente artículo se describe y se ilustra una nueva especie de *Cardiospermum* (*C. cuchujaquense*), la cual pertenece a *C.* sección *Carphospermum*. Mediante el descubrimiento de esta nueva especie se documenta un patrón de disyunción en la distribución de la sección *Carphospermum*.

*Cardiospermum* L. contains approximately 15 species of herbaceous vines or less often subshrubs. It belongs to the largely neotropical tribe Paullinieae (Sapindaceae) along with five other genera (*Serjania* Miller, *Paullinia* L., *Urvillea* Kunth, *Houssayanthus* Hunziker, and *Lophostigma* Radlkofer, Acevedo-Rdgz., 1993: 31). Among these genera *Urvillea* is the closest to *Cardiospermum*, since they share numerous synapomorphic characters. In fact, both genera are so closely related that sometimes they are hard to tell apart. However, as a rule, *Cardiospermum* has inflated capsules that differ from the non-inflated capsules of *Urvillea*.

*Cardiospermum* occurs throughout the Neotropics, with centers of distribution in west-central Brazil and north-central Mexico. It is the only genus within the Paullinieae with three of its species having a nearly cosmopolitan distribution. The only other member of Paullinieae to occur naturally outside the Western Hemisphere is *Paullinia pinnata* L., which is also found in tropical Africa (Exell, 1966; Fouilloy & Hallé, 1973). Although *Cardiospermum* is a relatively small genus, it is perhaps one of the most heterogeneous within the Paullinieae. *Cardiospermum* is also cytologically diverse, since different chromosome numbers have been re-

ported among the few species analyzed (Ferrucci, 1981).

Recent botanical explorations for the ongoing project *Flora of the Río Mayo Region of Sonora* have yielded the discovery of a new species of *Cardiospermum*, which we herein describe.

***Cardiospermum cuchujaquense*** M. S. Ferrucci & P. Acevedo-Rodríguez, sp. nov. TYPE: Mexico. Sonora: El Ranchería, crossing of Río Cuchujaqui, ca. 22.5 km S of Alamos on road to El Chinal, 26°51'N, 108°55'W, 200 m, in tropical deciduous forest, 10 Oct. 1992 (fl, fr), T. R. Van Devender, R. K. Van Devender, A. C. Sanders & B. Pitzer 92-1178 (holotype, US; isotypes, ARIZ, CTES, MEXU). Figures 1, 2.

Suffrutex scandens, subglaber; caule 6-costato, corpore lignoso simplici. Folia stipulis linearibus, 2.5–5 mm longis, acuminatis; folia trifoliolata, foliolis ovatis vel lanceolatis, 3.3–5.8 cm longis, chartaceis, sparsim setulosis, apice longe-acuminatis, margine inciso-dentatis vel lobatis; foliolo terminali basi longe-attenuato, foliolis lateralibus basi cuneatis. Capsula alata, septifraga, chartacea, ambitu trigono-obovato, loculis centraliter inflatis, extus glabris praeter venam dorsalem trichomatibus laxis indutam, intus glabris; seminibus subglobosis, 4.5–5.2 mm diam., trichomatibus paleaceis indutis, arillodio cordiformi.

Climbing shrub to 3.5 m long; stems herbaceous, 1–1.5 mm diam., 6-ribbed to nearly terete, pilose, sometimes with scattered minute glandular trichomes; cross section of stem with a single stele. Stipules linear, 2.5–5 mm long, pilose, falcate and usually reflexed, acuminate at apex; leaves trifoliolate; petiole pilose, 1.3–3.7 cm long, furrowed along adaxial surface; leaflets nearly sessile, ovate to lanceolate, often 1–2-lobed, 3.3–5.8 × 1.5–3.3 cm, chartaceous, concolorous, sparsely setulose, especially along veins and abaxial surface, the apex long acuminate, usually glandular, the margins remotely glandular-serrate, the terminal leaflet with a long attenuate base, the base of lateral ones asymmetric with a narrower acroscopic side, cuneate at

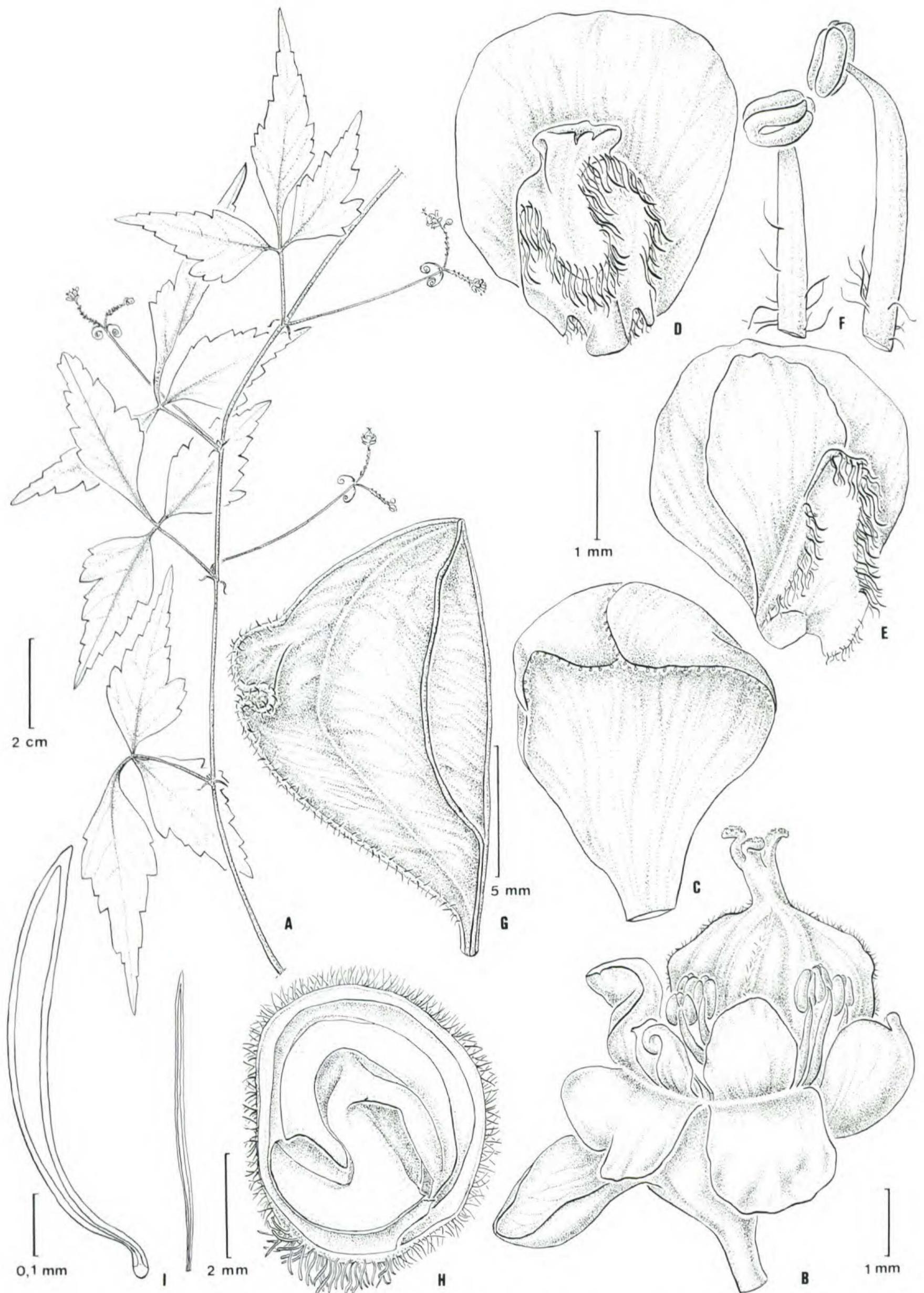


Figure 1. *Cardiospermum cuchujaquense* M. S. Ferrucci & P. Acevedo-Rodríguez. —A. Portion of flowering branch. —B. Pistillate flower. —C. Detail of third and fifth connate sepals. —D. Central petal with adnate appendage. —E. Lateral petal with adnate appendage. —F. Stamens from staminate flower. —G. Fragment of fruit cocculus, without partitioning wall. —H. Longitudinal section of seed showing embryo. —I. Seed trichomes. All from *T. R. Van Devender et al.* 92-1178.

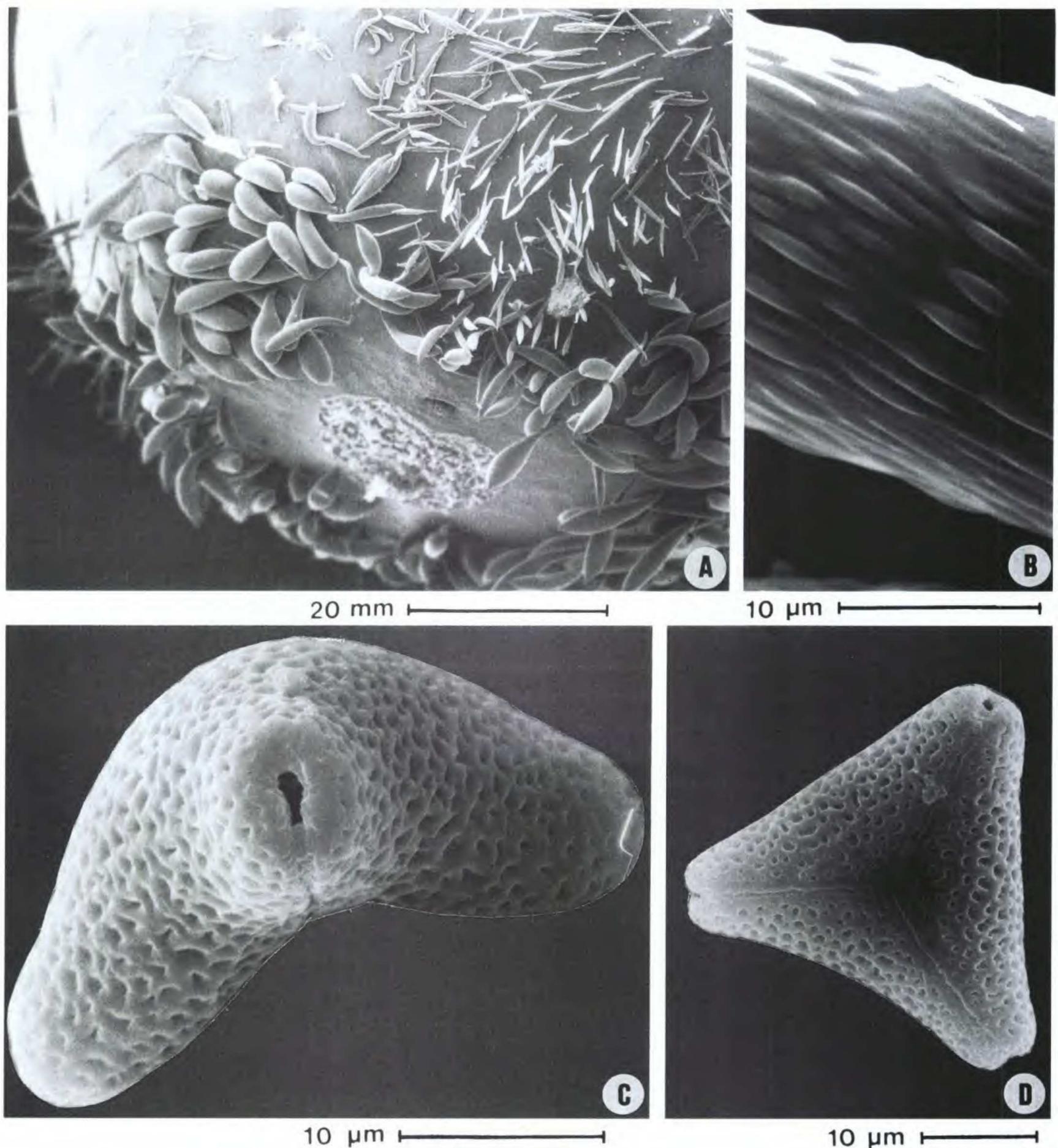


Figure 2. *Cardiospermum cuchujaquense*. —A. Arillar portion of seed, showing hylum, micropile, and fusiform and paleaceous trichomes. —B. Detail of paleaceous hair. —C. Pollen grain, equatorial view. —D. Pollen grain, polar view. All from T. R. Van Devender et al. 92-1178.

base. Thyrses axillary, simple, as long as or shorter than subtending leaf; axis 4-angled, pilose, 1.6–6 cm long, with a pair of delicate tendrils just below insertion of cincinni; bracts and bracteoles deltate to elliptic, ca. 1.5 mm long, overlapping, reddish tinged, pilose at margins; cincinni (1–)2(3–4), distal on axis, 2–20-flowered, 5–8 mm long; pedicels 1.5–2 mm long, articulated at middle; flowers secund. Pistillate flowers slightly larger than staminate ones: sepals green, 5, glabrous, glandular at margins, the outer 2 sepals ca.  $1.5 \times 1.2$ – $1.9$  mm,

suborbicular, the inner sepals  $3$ – $5 \times 1.5$ – $2.6$  mm, obovate, third and fifth sepals connate through  $\frac{3}{4}$  of their length; petals white, 3–3.2 mm long, broadly obovate, densely papillate on adaxial surface, the apex rounded; appendages of central petals hood-shaped, with fleshy entire apex; disk with four glands, the central glands ovoid with obtuse apex, the lateral glands with circular outline; torus enlarged, glabrous; filaments terete, pilose to glabrous, 2–2.7 mm long in staminate flowers, 1–2 mm long in pistillate flowers, the anthers oblong, ca. 0.5

mm long, glabrous; pistillode glabrous; gynoecium obovate in outline, ca. 5 mm long, pilose; style ca. 0.6 mm long. Capsule 3-carpellate, trigonous-obovoid, chartaceous, 1.4–1.6 × 2.0–2.2 cm, with narrow partitioning walls; cocculus slightly inflated, with dorsal suture pilose and compressed into a narrow wing; endocarp glabrous; seeds nearly spherical, 4.5–5.2 mm diam.; seed coat covered with chaffy trichomes; arillode heart-shaped, dry, light brown, ca. 2.6 × 1.7 mm with fusiform orange-brown trichomes; embryo with biplicate, smaller, adaxial cotyledon and curved, larger, abaxial cotyledon. Pollen grains hemitrisyncolporate, peroblate, polar axis 10.48–15.72  $\mu\text{m}$ , equatorial diam. 32.09–37.99  $\mu\text{m}$ .

*Distribution and habitat.* Known only from the state of Sonora, Mexico, in tropical deciduous forest and on rocky ledges of gorges.

*Cardiospermum cuchujaquense* is placed in *Cardiospermum* sect. *Carphospermum* Radlkofer because of its seeds bearing chaffy (paleaceous) trichomes, a character defining the section (Radlkofer, 1932: 372). On the basis of this character, *C. cuchujaquense* is taken as being closely related to the Brazilian species *C. anomalum* Cambessèdes and *C. strictum* Radlkofer, the only other members of section *Carphospermum* (Radlkofer, 1932: 412). *Cardiospermum cuchujaquense*, however, differs from these two species by its climbing, elongated (> 1 m long) stems (vs. erect, self-supporting, 15–50 cm tall); the presence of watch-spring-like tendrils (vs. tendrils absent); its stipules 2.5–5 mm long (vs. stipules ca. 0.5 mm long); by its flowers with a 5-merous calyx and a 4-glandular nectary disk (vs. 4-merous calyx and a 2-glandular nectary disk); and its hemispherical seeds (vs. lat-

erally flattened). The specific epithet refers to the locality where the species has been collected.

*Paratypes.* MEXICO. **Sonora:** Arroyo el Mentidero at El Chinal road, 11.3 km S of Alamos, 26°54'45"N, 108°55'05"W, 240 m, 6 Oct. 1992 (fl), *T. R. Van Devender et al.* 92-1012 (ARIZ, UCR, US); on rocky ledge in canyon wall, 28 Oct. 1995 (fl), *T. R. Van Devender et al.* 95-1171 (ARIZ, CTES, MEXU).

*Acknowledgments.* We thank Tom R. Van Devender (ARIZ) for his efforts in providing representative material for describing this new species. This included not only the collection of materials in the field, but also his efforts in cultivating the plants in order to provide young stages for chromosome counting. We also thank John F. Wiens of the Arizona Sonora Desert Museum for his detailed description of the plants grown at their greenhouse from seeds collected from the type locality. We also extend our appreciation to Liliana Gómez (CTES) for preparing the illustration, and to John Pruski (US), Mark T. Strong (US), and an anonymous referee for reviewing the manuscript.

#### Literature Cited

- Acevedo-Rdgz., P. 1993. Systematics of *Serjania* (Sapindaceae). Part I: A revision of *Serjania* sect. *Platycoccus*. Mem. New York Bot. Gard. 67: 1–93.
- Exell, A. W. 1966. Sapindaceae. In: A. W. Exell, A. Fernandes & H. Wild (editors), *Flora Zambesiaca* 2: 494–543. Crown Agents for Oversea Governments and Administrations, London.
- Ferrucci, M. S. 1981. Recuentos cromosómicos en Sapindaceas. *Bonplandia* 5(11): 73–81.
- Fouilloy, R. & N. Hallé. 1973. Sapindacées. In: A. Aubréville & J. F. Leroy (editors), *Flore du Gabon* 23: 1–202. Muséum National d'Histoire Naturelle, Paris.
- Radlkofer, L. 1932. Sapindaceae. In: A. Engler, *Pflanzenreich* IV. 165(Heft 98b): 321–640. Wilhelm Engelmann, Leipzig.